

Release notes for ENDF/B Development n-093\_Np\_236m1  
evaluation

**ENDF**  
B-VII.dev

April 26, 2017

- fudge-4.0 Warnings:

1. Potential scattering hasn't converted, you need more L's!  
*resonances / resolved / MultiLevelBreitWigner (Error # 0): potentialScatteringNotConverged*

WARNING: Potential scattering hasn't converged by L=0 at E=21.5 eV, xs[0]/xs[0]=100.0% > 0.1%

2. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 0: total (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 2.87%

- fudge-4.0 Errors:

1. ENDF format insists that all outgoing fission neutrons, delayed or otherwise, have spectra. For delayed neutrons this is tough.  
*Reading ENDF file: ../n-093\_Np\_236m1.endf (Error # 0): No delayed n dist*

WARNING: More than one delayed fission neutron decay time but no MF = 5 data

2. Duplicate Eout in outgoing distribution  
*Reading ENDF file: ../n-093\_Np\_236m1.endf (Error # 1): Bad Eout*

WARNING: skipping duplicate e\_out = 6577350.0, i1 = 128 0 1e-05

3. Energy range of data set does not match cross section range  
*reaction label 7: n + (Np236\_c ->Np236 + gamma) / Product: Np236\_c / Decay product: gamma\_a / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (200000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)

4. Energy range of data set does not match cross section range  
*reaction label 7: n + (Np236\_c ->Np236 + gamma) / Product: Np236\_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (200000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)

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WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)

... plus 2 more instances of this message

5. Energy range of data set does not match cross section range  
*reaction label 7: n + (Np236\_c ->Np236 + gamma) / Product: Np236\_c / Decay product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)

6. Energy range of data set does not match cross section range  
*reaction label 7: n + (Np236\_c ->Np236 + gamma) / Product: Np236\_c / Decay product: gamma\_c / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)

7. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \text{gamma}) / \text{Product: } Np236\_c / \text{Decay product: } \text{gamma\_d} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)
8. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \text{gamma}) / \text{Product: } Np236\_c / \text{Decay product: } \text{gamma\_e} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)
9. Energy range of data set does not match cross section range  
*reaction label 7:  $n + (Np236\_c \rightarrow Np236 + \text{gamma}) / \text{Product: } Np236\_c / \text{Decay product: } \text{gamma\_f} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (72307.61 -> 20000000.0)
10. Calculated and tabulated Q values disagree.  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} (\text{Error \# 0}): Q \text{ mismatch}$*
- WARNING: Calculated and tabulated Q-values disagree: -5564061.888641357 eV vs -5676680. eV!
11. Energy range of data set does not match cross section range  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} / \text{Product: } \text{gamma\_a} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)
12. Energy range of data set does not match cross section range  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} / \text{Product: } \text{gamma\_a} / \text{Distribution: } / \text{uncorrelated - angular - isotropic: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)
13. Energy range of data set does not match cross section range  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} / \text{Product: } \text{gamma\_b} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)
14. Energy range of data set does not match cross section range  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} / \text{Product: } \text{gamma\_b} / \text{Distribution: } / \text{uncorrelated - angular - isotropic: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)
15. Energy range of data set does not match cross section range  
*reaction label 8:  $n[\text{multiplicity:}'2'] + Np235 + \text{gamma} / \text{Product: } \text{gamma\_c} / \text{Multiplicity: (Error \# 0): Domain mismatch (a)}$*
- WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

16. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

17. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_d / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

18. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_d / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

19. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_e / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

20. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_e / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6000000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

21. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_f / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

22. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_f / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

23. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_g / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

24. Energy range of data set does not match cross section range  
*reaction label 8: n[multiplicity:'2'] + Np235 + gamma / Product: gamma\_g / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (6500000.0 -> 20000000.0) vs (5700940.0 -> 20000000.0)

25. Calculated and tabulated Q values disagree.  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -12547180.95907593 eV vs -1.26598e7 eV!

26. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_a / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

27. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

28. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

29. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

30. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_c / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

31. Energy range of data set does not match cross section range  
*reaction label 9: n[multiplicity:'3'] + Np234 + gamma / Product: gamma\_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (13500000.0 -> 20000000.0) vs (12713900.0 -> 20000000.0)

32. Calculated and tabulated Q values disagree.  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -18611601.91622925 eV vs -1.87242e7 eV!

33. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_a / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18804200.0 -> 20000000.0)

34. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18804200.0 -> 20000000.0)

35. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_b / Multiplicity: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18804200.0 -> 20000000.0)

36. Energy range of data set does not match cross section range  
*reaction label 10: n[multiplicity:'4'] + Np233 + gamma / Product: gamma\_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)*

WARNING: Domain doesn't match the cross section domain: (19500000.0 -> 20000000.0) vs (18804200.0 -> 20000000.0)

37. Calculated and tabulated Q values disagree.  
*reaction label 12: Np237 + gamma (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 6749967.562713623 eV vs 6637350. eV!

38. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 3: n + (Np236\_c ->Np236 + gamma) total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 21.65%

39. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 4: n[multiplicity:'2'] + Np235 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 100.00%

40. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 5: n[multiplicity:'3'] + Np234 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 78.49%

41. Multiplicity does not match sum of linked product multiplicities!  
*multiplicitySum label 6: n[multiplicity:'4'] + Np233 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch*

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 100.00%

• njoy2012 Warnings:

1. Evaluation has no unresolved resonance parameters given  
*unres...calculation of unresolved resonance cross sections (0): No URR*

---message from unres---mat 9344 has no unresolved parameters  
copy as is to nout

2. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (0): HEATR/hinit (4)*

---message from hinit---mf6, mt 16 does not give recoil za= 93235  
one-particle recoil approx. used.

3. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (1): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 17 does not give recoil za= 93234
one-particle recoil approx. used.
```

4. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (2): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 37 does not give recoil za= 93233
one-particle recoil approx. used.
```

5. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (3): HEATR/hinit (4)*

```
---message from hinit---mf6, mt 91 does not give recoil za= 93236
one-particle recoil approx. used.
```

6. Recoil is not given, so one-particle recoil approximation used.  
*heatr...prompt kerma (4): HEATR/hinit (4)*

```
---message from hinit---mf6, mt102 does not give recoil za= 93237
photon momentum recoil used.
```

7. There is a problem with the fission energy release.  
*heatr...prompt kerma (17): HEATR/nheat (3)*

```
---message from nheat---changed q from 1.902335E+08 to 1.853419E+08
for mt 18
```

8. Evaluation has no unresolved resonance parameters given  
*purr...probabalistic unresolved calculation (0): No URR*

```
---message from purr---mat 9344 has no unresolved parameters
copy as is to nout
```

- **xsectplotter** Errors:

1. ENDF format insists that all outgoing fission neutrons, delayed or otherwise, have spectra. For delayed neutrons this is tough.  
*(Error # 2): No delayed n dist*

```
WARNING: More than one delayed fission neutron decay time but no MF = 5 data
```

2. Duplicate Eout in outgoing distribution  
*(Error # 3): Bad Eout*

```
WARNING: skipping duplicate e_out = 6577350.0, i1 = 128 0 1e-05
```